

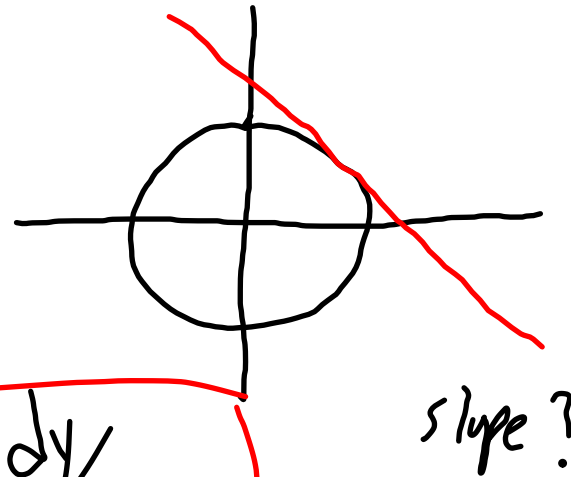
### 3.6 b chain rule for parametric example equations

$$x(t) = \cos t$$

$$y(t) = \sin t$$

$t$  - parameter

$$\text{slope} = \frac{dy}{dx} = \frac{dy/dt}{dx/dt}$$



$$\frac{dy}{dx} = \frac{\cos t}{-\sin t}$$

$$\left. \frac{dy}{dx} \right|_{t=\frac{\pi}{4}} = -1$$

ex 6       $x = \sec t$        $y = \tan t$

$t = \frac{\pi}{4} \quad (\sqrt{2}, 1)$

$-\frac{\pi}{2} < t < \frac{\pi}{2}$

find the tan line.

$y = \sqrt{2}(x - \sqrt{2}) + 1$

slope =  $\frac{dy}{dx} = \frac{\sec^2 t}{\sec t \tan t} = \frac{\sec t}{\tan t}$

$t = \frac{\pi}{4} \quad \frac{dy}{dx} = \frac{\sqrt{2}}{1} = \sqrt{2}$